1-1-2018

Muskmelon Variety Trial in Southwest Indiana- 2017

Wenjing Guan
Purdue University

Dan Egel
Purdue University - Main Campus, egel@purdue.edu

Dennis Nowaskie
Southwest Purdue Agriculture Center, nowaskie@purdue.edu

Alex Plummer
Purdue University

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Wenjing Guan, Daniel S. Egel, Dennis Nowaskie and Alex Plummer
Southwest Purdue Agricultural Center, Vincennes, IN, 47591 guan40@purdue.edu

Introduction

Cantaloupe production in Indiana ranked fifth in planted area in the U.S. in 2016. 1,800 acres of cantaloupes were planted with a total value of $7.2 million. Cantaloupes grown in Indiana are primarily eastern variety types that form tan-colored netting and develop an identifiable abscission zone during ripening. Honeydew melons are grown in Indiana on a smaller scale. One variety of honeydew melon was included in the trial.

Materials and Methods

Seed sources of the six melon varieties are provided in Table 1. Among them, 'Astound' 'Accolade', 'Aphrodite', and 'Athena' are eastern-type cantaloupes; 'MS4344' is a long-shelf life variety; 'Madelon F1' is a honeydew variety. Seeds of all the varieties were planted into 50-cell black seeding flats (T.O. Plastics, Clearwater, MN) on 18 April 2015, using a peat-based potting media (Metro-Mix® 360, a mixture of sphagnum peat moss, coarse perlite, bark ash, starter fertilizer, and dolomite). Transplants were produced in a greenhouse at the Southwest Purdue Agricultural Center (SWPAC). Plants were transplanted to the field on 16 May 2017.

Ade loamy fine sand was the soil type of the experimental site, and the previous crop (2016) was corn. Randomized complete block design with three blocks and 20 plants per variety per plot was used in the study. Plants were grown in raised beds covered with black plastic mulch. Drip tape with a 12-inch emitter spacing and flow rate of 0.22 gpm/100 ft was used for irrigation. Bed spacing and in-row spacing were 6 and 2.5 ft, respectively. Fertilizers at the rate of 250 lb/acre urea (46-0-0), 130 lb/acre potash (0-0-60), 100 lb/acre diammonium phosphate (18-46-0), 200 lb/acre pelletized lime, 100 lb/acre K-Mag granular (0-0-22-11-22), 100 lb/acre ammonium sulfate (21-0-0-24), 7 lb/acre boron 14.3% and 10 lb/acre Zinc 10% LS were pre-plant broadcast applied. During transplanting, each plant received approximately one cup of starter fertilizer solution (Miracle-Gro, 4.7 grams per gallon water). Diseases and insects were managed by scouting and using recommendations from Melcast (melcast.info) and *Midwest Vegetable Production Guide for Commercial Growers* (Egel et al., 2016). Bravo®, Inspire Super®, Pristine®, Monsoon®, Rally®, and Tanos® were rotationally sprayed for disease control. Admire Pro® was used during transplant to control cucumber beetles. Assail® was sprayed for controlling aphids, Portal® was used to control two-spotted spider mites.

Plants were harvested three times a week from 11 July to 4 Aug. Fruit was weighed individually. Twelve fully ripe fruit from each variety were collected during peak harvest for the evaluation of fruit quality attributes. Fruit size, seed cavity size, rind thickness, total soluble solids, and flesh firmness were recorded. Data analysis of variance was performed using the Proc Mixed procedure of SAS. Fisher's least significant difference test ($\alpha = 0.05$) was conducted for multiple comparisons of different measurements among cantaloupe varieties.

Results and Discussion

Yields of melon varieties arranged from 28,910 to 52,972 lbs/acre (Table 2). 'Aphrodite' and 'Astound' had the highest yield, significantly higher than 'Athena', 'MS4344', and 'Madelon

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F1'. 'Astound' and 'Aphrodite' were also the top yielding varieties in the 2016 variety trial. Yield of the long-shelf life variety 'MS4344' was significantly lower than the other varieties in the 2017 trial. Among the eastern type cantaloupes, 'Aphrodite' had the largest fruit size and the biggest seed cavities (Table 3 and 4). Flesh of 'Astound' and 'Accolade' were firmer than 'Aphrodite' and 'Athena', but total soluble solids of 'Astound' and 'Accolade' were lower than 'Aphrodite' and 'Athena'. The long-shelf life variety 'MS4344' and the honeydew melon 'Madelon F1' had the highest sugar content. They also produced fruit with firmer flesh compared with eastern-type cantaloupes. Both 'MS4344' and 'Madelon F1' were harvested one week later than eastern-type cantaloupes (Figure 1).

References

Egel, D., R. Foster, E. Maynard, R., et al. 2016. *Midwest Vegetable Production Guide for Commercial Growers*, 2017 (ID-56). Purdue University.

USDA, 2017. National Agricultural Statistics Service. Vegetables 2016 Summary. < http://usda.mannlib.cornell.edu/usda/nass/VegeSumm//2010s/2017/VegeSumm-02-22-2017_revision.pdf>.

Acknowledgements

The authors would like to thank Angie Thompson, Bill Davis, Barbara Joyner and Curtis Marchino for their invaluable technical assistance with the variety trial. We also want to thank seed companies involved for financial support.

Table 1. Varieties and seed sources in the 2017 variety trial in southwest Indiana.

Variety	Seed company
Astound	Syngenta
Accolade	Syngenta
Aphrodite	Syngenta
Athena	Syngenta
MS4344	Syngenta
Madelon F1	Bejo Seeds

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Table 2. Yields of melon varieties in the 2017 variety trial in southwest Indiana.

	Weight (lb) per acre		Number of fruit per acre		Average fruit weight (lb)	
Astound	52,501	a[z]	9,922	a	5.29	bc
Accolade	47,225	ab	8,760	ab	5.39	b
Aphrodite	52,972	a	7,889	b	6.72	a
Athena	38,618	b	7,792	b	4.96	bc
MS4344	28,910	c	6,001	c	4.75	c
Madelon F1	40,496	b	7,889	b	5.13	bc

[z.]Means within a column followed by the same letter are not significantly different according to Fisher's least significant difference test at $P \leq 0.05$.

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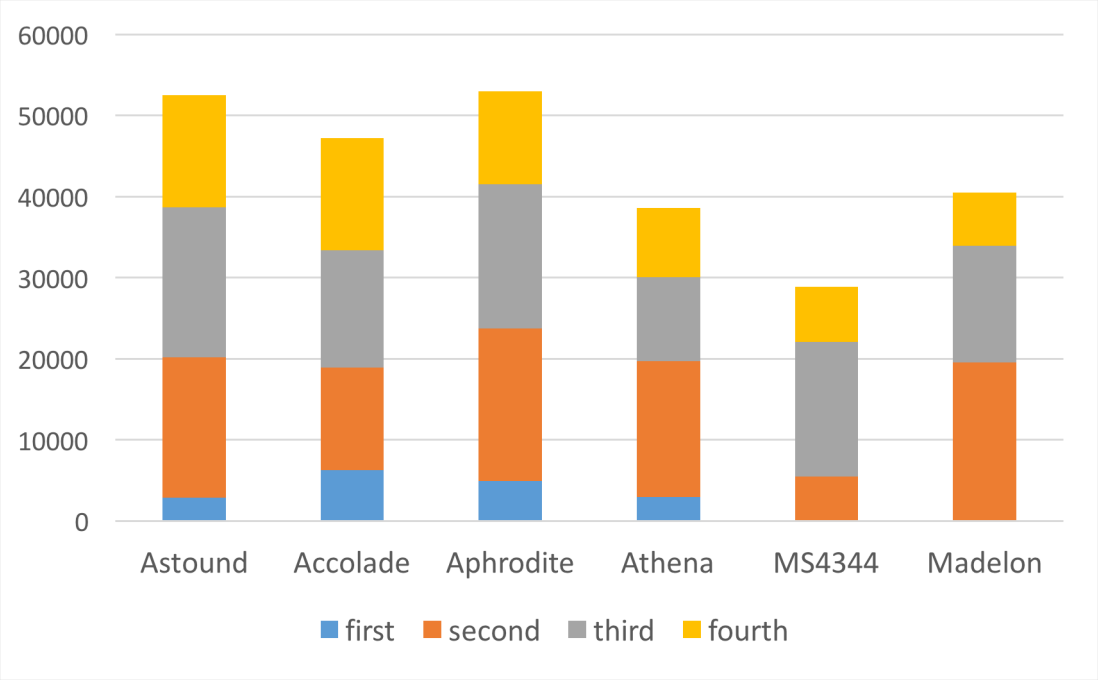

Figure 1. Yield (lbs/A) of melon varieties harvested in each week in the 2017 variety trial in southwest Indiana.

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Table 3. Fruit quality of melon varieties in the 2017 variety trial in southwest Indiana.

Variety	Total soluble solids (°Brix)	Firmness (lbs-force)	Rind (cm)	Fruit length (cm)	Fruit width (cm)	Seed cavity length (cm)	Seed cavity width (cm)
Astound	9.32 c[z]	4.09 c	1.02 ab	20.33 abc	17.95 bc	12.57 b	6.59 c
Accolade	9.50 c	4.11 c	1.20 ab	20.57 ab	18.65 b	12.65 b	7.78 bc
Aphrodite	10.56 ab	3.26 cd	1.28 a	21.84 a	20.98 a	14.98 a	9.97 a
Athena	9.62 bc	2.48 d	1.13 ab	20.10 bc	18.08 bc	12.53 b	7.52 bc
MS4344	11.49 a	7.47 a	0.96 b	18.85 c	16.84 c	11.94 b	7.37 c
Madelon F1	11.42 a	5.37 b	0.67 c	19.11 bc	18.37 b	12.20 b	9.10 ab

[z.]Means within a column followed by the same letter are not significantly different according to Fisher's least significant difference test at $P \leq 0.05$.

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Table 4. Percentages of melons in fruit weight categories in the 2017 variety trial in southwest Indiana.

	< 4 lb	4-6 lb	6-8 lb	8-10 lb	>10 lb
Astound	17.07	48.78	33.66	0.49	0
Accolade	15.47	52.49	30.94	1.10	0
Aphrodite	9.26	24.07	40.74	20.98	4.93
Athena	19.25	63.35	16.15	1.24	0
MS4344	30.64	49.19	20.16	0	0
Madelon F1	20.99	53.70	22.22	3.08	0

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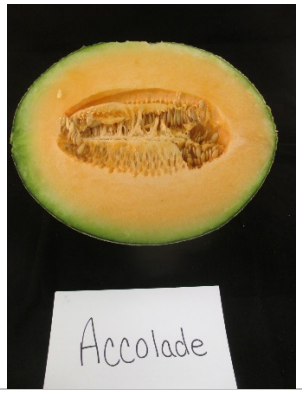
Astound		
Accolade		
Aphrodite		
Athena		

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Madelon F1		
MS 4344		

Figure 4. Exterior and interior of melon varieties in the 2017 variety trial in southwest Indiana.

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